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TECHNICAL MEMORANDUM

Utah Coal Regulatory Program

October 1, 2007

TO: Internal File

THRU: Pamela Grubaugh-Littig, Permit Supervisor

FROM: Dana Dean, P.E., Senior Reclamation Hydrologist/Team Lead

RE: Waste Rock Pile Expansion, Canyon Fuel Company, Skyline Mine, C/007/0005, Task ID #2844

SUMMARY:

Canyon Fuel Company (the Permittee) submitted a proposal to move the sedimentation pond at the Skyline Mine waste-rock disposal site on September 6, 2006. They planned to fill in the current pond in order to extend the life of the facility for 5-6 years. The new pond was directly north of the old pond and designed to capture runoff from the same watershed. The Division responded to the application with a deficiency list on November 13, 2006. On May 3, 2007 Canyon Fuel submitted a different plan, wherein the site would be expanded in a different manner, and the current sedimentation pond would remain in place and capture all storm runoff from the site. The Division responded to the application with a deficiency list on July 6, 2007. Canyon Fuel submitted additional information relating to the latest deficiency list on August 30, 2007.

Since the sedimentation pond, and most other hydrologic structures at the waste rock site have been in place for some time, and this is a small change to the disturbed area, much pertinent information is found in the currently approved Mining and Reclamation Plan (MRP).

This technical memorandum discusses the hydrology related issues pertaining to the application.

The application meets the requirements of the relevant hydrology regulations. The Division should approve it and incorporate it into the approved MRP.

TECHNICAL ANALYSIS:

OPERATION PLAN

HYDROLOGIC INFORMATION

Regulatory Reference: 30 CFR Sec. 773.17, 774.13, 784.14, 784.16, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-300-140, -300-141, -300-142, -300-143, -300-144, -300-145, -300-146, -300-147, -300-147, -300-148, -301-512, -301-514, -301-521, -301-531, -301-532, -301-533, -301-536, -301-542, -301-720, -301-731, -301-732, -301-733, -301-742, -301-743, -301-750, -301-761, -301-764.

Analysis:

Groundwater Monitoring

No additional groundwater monitoring is needed for this small expansion. The currently approved MRP meets the requirements of R645-301-731.210-215 concerning groundwater monitoring, and R645-301-731.110-112 concerning groundwater protection.

The Permittee currently monitors well 92-91-03 at the Waste Rock Disposal Site.

The Permittee buries all waste rock material beneath at least 48" of suitable material, and does not bury anything on top of seeps or springs.

Surface Water Monitoring

No additional surface water monitoring is needed for this small expansion. The currently approved MRP meets the requirements of R645-301-731.220-225 concerning surface water monitoring, and R645-301-731.120-122 concerning surface water protection.

The Permittee currently monitors four surface sites near the Waste Rock Disposal Site (WRDS #1-4). WRDS #1 has had enough water to sample just 3 times in 50 sampling periods since 1989, the other three have always been dry.

Acid- and Toxic-Forming Materials and Underground Development Waste

The currently approved MRP meets the requirements of R645-301-731.300.

The Permittee tests the waste rock for acid- and toxic-forming materials every 2000 tons. All unsuitable material is placed where it is not in contact with groundwater, and is buried beneath at least 48" of suitable material.

Water-Quality Standards And Effluent Limitations

The Permittee continues to comply with R645-301-751.

A copy of the current Utah Pollutant Discharge Elimination System (UPDES) permit is included in the application. The permit applies to the mine water discharge and to the sedimentation ponds located at the mine-site, the coal loadout, and the Waste Rock Disposal Site. The Permittee has continually complied with all requirements of this permit.

Diversions

The Permittee has met the requirements of R645-301-7742.310-330. All diversions at the Waste Rock Development Site have been in place and stable for over 20 years. All diversions are designed to control the peak discharge from a 10-yr.6-hr. storm. Information and designs for each diversion are contained in the approved MRP in Volume 5, Sections 14 and 15. Reevaluation information for the disturbed drainages is found in the Report "Analysis Of Sedimentation Pond Capacity Following Waste Rock Pile Expansion, Skyline Mine, Scofield, Utah."

Siltation Structures: Sedimentation Ponds

The Permittee has met the requirements of the regulations relating to sedimentation ponds. The currently approved and functioning sedimentation pond will continue to treat the runoff from the Waste Rock Disposal Site and associated watersheds. The Permittee did reevaluate the pond, and found that it does not need to be modified in conjunction with this small change in disturbed area. In particular, the currently approved and functioning sedimentation pond meets the requirements as follows:

R645-301-742.221-221.2: The Permittee uses a single sedimentation pond at the Waste Rock Development Site. The pond is located at the bottom of the disturbed area, and away from perennial streams.

R645-301-742.221.31-33: The Permittee has considered the possible sediment contribution from the disturbed and undisturbed areas reporting to the pond. They used an adaptation of the Universal Soil Loss Equation (RUSLE) to determine the annual sediment volume entering the pond. The pond is more than large enough to *contain* the design storm (10 yr.-24 hr.), and a year's worth of sediment. The total pond capacity is 1.41 acre-feet, the design-storm runoff volume is 0.80 acre-feet, and one year's sediment

yield is 0.24 acre-feet. No discharge will occur, unless a larger storm, or successive design storms arise.

R645-301-742.221.34-35: The primary spillway a swale located approximately one foot below the embankment. It is 10 feet wide and 1 foot deep, extending for 18 feet. Additionally there is an 8-inch decant pipe designed to discharge 3 cfs with the inlet more than five feet below the top of the embankment. The decant pipe is generally closed but has a valve that can be opened when necessary.

Detention time and short circuiting do not a apply for the required design storm, since it will be totally contained by the pond

R645-301-742.221.36: The Permittee has committed to remove the sediment from the pond when it reaches 60% of the total sediment capacity (7857.7 feet amsl).

R645-301-742.221.37-39: The pond was designed and constructed under the supervision of a registered professional engineer. It has been functioning, and stable for over twenty years.

R645-301-742.222 does not apply. The pond is substantially smaller than 20 acre-feet, and the embankment is only five feet above the bottom of the pond.

R645-301-742.223-223.2: The swale spillway is large enough to discharge the peak flow from a 25-yr. 6-hr. storm event. The calculation assumed that the pond was full to the elevation of the spillway when the storm started. The peak discharge would be 6.60 cfs, at a velocity of 1.3 fps. This low velocity does not require any armoring of the outlet swale, and flows are expected to be very infrequent, as the pond has never discharged.

Reevaluation information for the Sedimentation pond is found in the Report "Analysis Of Sedimentation Pond Capacity Following Waste Rock Pile Expansion, Skyline Mine, Scofield, Utah."

Discharge Structures

The currently approved MRP meets the requirements of R645-301-744. All discharge points where the velocity is high enough to be considered erosive are armored with the appropriate size rip-rap, or discharge into plunge pools designed to dissipate energy.

Impoundments

The currently approved MRP meets all of the requirements concerning the construction of impoundments. The sedimentation pond is the only impoundment at the Waste Rock

Development Site. It was designed and constructed according to the requirements under the direction of a registered professional engineer and has been in place and stable for over 20 years.

Certification Requirements

A registered professional engineer has properly certified all plans related to the hydrologic structures at the Waste Rock Development Site.

Findings:

The Permittee has met the Hydrologic Operation Plan Information requirements of the regulations.

MAPS, PLANS, AND CROSS SECTIONS OF MINING OPERATIONS

Regulatory Reference: 30 CFR Sec. 784.23; R645-301-512, -301-521, -301-542, -301-632, -301-731, -302-323.

Analysis:

Mining Facilities Maps

The Permittee has met the requirements of R645-301-731.720, and R645-301-731.740 by depicting the sedimentation pond and all pertinent hydrologic structures on Drawings 3.2.8.1, 3.2.8.2, and 3.2.8.4.

Certification Requirements

The Permittee has met the requirements of R645-301-712. A registered professional engineer has properly certified all maps related to the hydrologic structures at the Waste Rock Development Site.

Findings:

The Permittee has met the Maps, Plans, and Cross-Sections of Mining Operations requirements of the regulations.

RECLAMATION PLAN

HYDROLOGIC INFORMATION

Regulatory Reference: 30 CFR Sec. 784.14, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-301-512, -301-513, -301-514, -301-515, -301-532, -301-533, -301-542, -301-723, -301-724, -301-725, -301-726, -301-728, -301-729, -301-731, -301-733, -301-742, -301-743, -301-750, -301-751, -301-760, -301-761.

Analysis:

Impoundments

The Permittee will remove all hydrologic structures at the Waste Rock Development Site, except for those related to the road, and the sedimentation pond.

The landowner has requested that the road and pond stay in place post-reclamation. The current plan and bond consider the reclamation of the pond. If the pond stays in place, the currently approved MRP meets most of the regulations for a permanent impoundment.

In addition to the regulations already met, at the end of reclamation the Permittee will have demonstrate compliance the following in order to leave the pond and to obtain bond release. R645-301-413.100 through R645-301-413.334, R645-301-542.400, R645-301-733.220 through R645-301-733.224, R645-302-270 through R645-302-271.400, and R645-302-271.900.

Findings:

The Permittee has met the Hydrologic Reclamation Plan requirements of the regulations.

MAPS, PLANS, AND CROSS SECTIONS OF RECLAMATION OPERATIONS

Regulatory Reference: 30 CFR Sec. 784.23; R645-301-323, -301-512, -301-521, -301-542, -301-632, -301-731.

Analysis:

Reclamation Facilities Maps

The Permittee has met the requirements of R645-301-521.125 and R645-301-542.320 by depicting the final disposition of the sedimentation pond (if left in place) on Drawing 4.16.1-1B.

Reclamation Treatments Maps

The Permittee has met the requirements of R645-301-731.720 by depicting the final disposition of each diversion to be left in place on Drawing 4.16.1-1C.

Certification Requirements.

The Permittee has met the requirements of R645-301-712. A registered professional engineer has properly certified all maps related to the reclamation of hydrologic structures at the Waste Rock Development Site.

Findings:

The Permittee has met the Maps, Plans, and Cross-Sections of Reclamation Operations requirements of the regulations.

CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT

Regulatory Reference: 30 CFR Sec. 784.14; R645-301-730.

Analysis:

The Division completed a Cumulative Hydrologic Impact Assessment in February, 2006. It already includes the Waste Rock Development Site area, and does not need to be updated.

Findings:

The current CHIA is sufficient to meet the requirements of the R645 Rules.

RECOMMENDATIONS:

The application meets the requirements of the relevant hydrology regulations. The Division should approve it and incorporate it into the approved MRP.

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